

NOTE TO PTO PERSONNEL:
THIS PATENT APPLICATION IS BEING
FILED WITH SMALL ENTITY STATUS

AN IMPROVEMENT ON A PROTECTING INSERT OF A GOLF CLUB

BACKGROUND OF THE INVENTION

5 1. Field of the invention

The present invention relates to a protecting insert of a golf club, which is disposed between the club head and the shaft for cushioning the shaft from fracture, more particularly one, which is formed with through holes extending from inner side to outer side so that adhesive is capable
10 of, when applied between the protecting insert and the shaft and between the insert and the club head, passing into the through holes to increase firmness of the connection of the protecting insert with both the club head and the shaft, thus preventing linear displacement and angular displacement of the insert relative to both the shaft and the club head
15 when the golf club hits a golf ball hard.

2. Brief Description of the Prior Art

When a golf club hits a golf ball, the shaft of the club is subjected to a relatively large amount of stress, which tends to cause fracture of the shaft at the point at which it enters the club head. Therefore, it is a
20 common practice for the manufactures of golf clubs to position a protecting insert between the shaft and the shaft for cushioning the shaft against fracture.

Referring to Figs. 5, and 6, a golf club with a protecting insert is

disclosed in U.S. patent no. 5,452,890, Golf club head having protecting insert; the golf club is comprised of a club head 10, a shaft 14, and a protecting insert 40 which is less hard than the shaft 14 for cushioning the shaft 14 against fracture; the club head 10 has a hosel 30 having an upper shaft-receiving opening 31, and a cylindrical bore 32, which extends downwardly from the opening 31, and which has a shoulder 38 therein; the insert 40 has a bore 41, and a lip 44; the insert 40 is inserted into the upper end of the bore, and is seated on the shoulder 38 with the lip 44 being on top of the hosel 30; the shaft 14 is passed through the insert 40 and into the bore 32 of the club head 10, and glue is applied between the shaft 14 and the insert 40 as well as between the wall of the bore 32 and the insert 40 to fix the shaft 14 and the insert 40 in position so that the shaft 14 is cushioned against fracture.

Because the glue is only applied between outer surface of the protecting insert 40 and the wall of the bore 32 and between inner surface of the protecting insert 40 and the shaft 14, the glue is prone to lose the grip on the shaft 14 and the wall of the bore 32 over time, and in turns, the insert 40 becomes loose, and can't cushion the shaft 14 against fracture.

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SUMMARY OF THE INVENTION

It is a main object of the present invention to provide a protecting insert of a golf club that will overcome the above disadvantage.

The protecting insert includes an upper end portion, and a lower fixing end portion smaller than the upper end portion in diameter while the club head has a borehole for insertion of both the shaft and the insert; the insert is joined to the club head with the lower fixing end portion being fitted in a bigger upper portion of the borehole, and with glue being applied between the insert and a wall of the borehole upper portion; a lower end of the shaft is inserted through the insert and into the borehole with glue being applied thereon. The protecting insert is formed with through holes on the lower end portion so that glue can be contained therein to connect the glue applied on the shaft, and the glue applied between the insert and the club head, and in turns, firmness of the insert is secured, preventing shock and torque on the club head from causing displacement of the insert relative to the shaft and the club head when the club hits a ball hard.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be better understood by referring to the accompanying drawings, wherein:

Fig. 1 is a perspective view of the protecting insert of a golf club according to the present invention,

Fig. 2 is an exploded cross-sectional view of the golf club according to the present invention,

Fig. 3 is a cross-sectional view of the golf club of the present invention,

Fig. 4 is a partial enlarged cross-sectional view of the golf club according to the present invention,

5 Fig. 5 is an exploded cross-sectional view of the conventional golf club as described in the Background, and

Fig. 6 is a cross-sectional view of the conventional golf club.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

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Referring to Figs. 1, and 2, a preferred embodiment of a golf club in the present invention includes a club head 5, a shaft 7, and a protecting insert 6 for the shaft 7.

The club head 10 has a hosel 51 having a shaft-receiving borehole, 15 which extends downwardly from the top of the hosel 51, and which includes an upper portion 52, and a lower portion 53; the borehole lower portion 53 is coaxial with the upper portion 52, and has smaller diameter than the upper portion 52.

The protecting insert 6 is preferably made of materials that are 20 softer than the shaft 7, e.g. plastic, and rubber, and has a first through hole 61, an upper end portion, and a fixing lower end portion 62, which has a smaller diameter than the upper end portion. The fixing lower end portion 62 is formed with such a size as to be capable of fitting with the

upper portion 52 of the borehole of the club head 5. The fixing lower portion 62 is formed with several second through holes 63 extending from an inner side to an outer side thereof.

In combination, referring to Figs. 3, and 4, the fixing lower end
5 portion 62 of the protecting insert 6 is inserted into the upper portion 52 of the borehole of the club head 5 with glue 8 being applied into the second through holes 63, and between the outer side of the fixing lower end portion 62 and the wall of the borehole upper portion 52. And, a lower end of the shaft 7 is inserted through the first through hole 61 of
10 the insert 6, and into the lower portion 53 of the borehole of the club head 5 with glue 8 being applied thereon, and into the second through holes 63. Thus, the insert 6 is fixedly connected to both the club head 5 and the shaft 7, and the glue 8 is spread over both the outer side of the insert 6 and the inner side of the insert 6, and is contained in the second
15 through holes 63.

Therefore, in addition to the grip on the protecting insert 6 which is formed between the outer surface of the insert 6 and the wall of the borehole upper portion 52 as well as between the inner surface of the insert 6 and the shaft 7, the grip on the insert 6 is significantly increased
20 which is formed by those portions of the glue 8 that are in the second through holes 63 of the insert 6 to prevent both linear displacement and angular displacement of the insert 6 relative to both the shaft 14 and the club head 5; those portions of the glue 8 that are held in the second

through holes 63 of the insert 6 can function like a pin which is inserted into objects to join them together. And, the function of the insert 6, to help prevent fracture and damage of the shaft 7, is secured, and in turns, repair cost of the club will decrease.

5 When the head of a golf club hits a golf ball, it is subjected to a relatively large amount of torque and shock. The shock is likely to be passed on to the whole shaft, and causes up and down vibration of a protecting insert for the shaft. And, in case the club head and the shaft are made of different materials, the torque is like to make the glue lose
10 its grip that is applied between the club head and the protecting insert and between the shaft and the insert, and cause angular displacement of the club head relative to the shaft and the insert.

 In the present invention, torque and shock on the club head 5 are prevented from causing angular or linear displacements of the insert 6
15 relative to the club head 5 when the club head 5 hits a ball hard because those portions of the glue 8 that are held in the second through holes 63 of the insert 6 can function like a pin that is inserted into objects to join them together. Therefore, the protecting insert in the present invention can be securely fixed in position to cushion the shaft 7 against fracture
20 effectively.

 Furthermore, the second through holes 63 of the protecting insert 6 can be formed in regular shape, e.g. round, and square, or in irregular shapes.